

New *Ouratea* Species (Ochnaceae) from Venezuela and Adjacent Countries

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ABSTRACT. Descriptions and illustrations are provided for the following new species: *Ouratea lajaensis* Sastre and *O. arborevicalyx* Sastre (sect. *Kaieteurea*), *O. kanukuensis* Sastre, *O. pseudomarahuacensis* Sastre (sect. *Ouratea*), *O. multibracteata* Steyermark ex Sastre, *O. heterobracteata* Sastre (sect. *Ouratella*), *O. vieirae* Sastre, *O. papulosa* Sastre, *O. orisina* Sastre (sect. *Caducae*, with spicate inflorescences), *O. saldariagae* Sastre, *O. pulverulenta* Sastre, *O. obovata* Sastre (sect. *Caducae*, with short, paniculate inflorescences), *O. fusiformis* Sastre, *O. megaphylla* Sastre, *O. maguirei* Sastre, *O. rorida* Sastre, *O. elongata* Sastre, *O. maigualidae* Sastre (sect. *Caducae*, with large, paniculate inflorescences). In addition, a new combination is made for *Ouratea stipulata* (Vellozo) Sastre (basionym *Ochna stipulata* Vellozo), and a short biogeographical synthesis of the *Ouratea* in the Guayana Shield is presented.

Key words: Ochnaceae, *Ouratea*, Venezuela.

In a recent paper (Sastre, 1995), in preparation of the Ochnaceae treatment for the *Flora of the Venezuelan Guayana*, I described eight new species from Venezuela and adjacent countries of *Ouratea* in sections *Cardiocarpae* (Engler) Sastre, *Ouratea*, and *Ouratella* (Tieghem) Sastre. This current paper contains new species in sections *Kaieteurea* (Dwyer) Sastre, *Ouratea*, *Ouratella* (Tieghem) Sastre, and *Caducae* Sastre from Venezuela and adjacent countries. Section *Caducae* is here divided into three groups: (1) taxa with spiciform inflorescences, (2) taxa with short paniculate inflorescences (< 6 cm long), (3) taxa with large paniculate inflorescences (> 6 cm long).

Ouratea sect. **Kaieteurea** (Dwyer) Sastre, Bull. Mus. Natl. Hist. Nat. 4° sér. 10, sect. B Adanson 1: 50. 1998. *Kaieteurea* Dwyer, Bull. Torrey Bot. Club 70: 50. 1943.

Inflorescence terminal or axillary; flowers with 3–4 sepals united in 2–3 parts, and 5(–7, *O. articulata* Sastre) carpels; fruits with sepals caducous or persistent and the carpels vertical.


1. ***Ouratea lajaensis* Sastre, sp. nov.** TYPE: Venezuela. Amazonas: Dept. Atures, 15 km N de Puerto Ayacucho, E de la comunidad Picatal, al pie de una laja, 18 Apr. 1988, C. Sastre & E. Gutierrez 8567 (holotype, P; isotype, VEN). Figure 1.

Ab *Ouratea polyantha* Triana & Planchon foliis pruinosis, margine integra, inflorescentiis brevibus et floribus pedunculo crasso, differt. Ab *O. brevicalyx* Maguire & Steyermark foliis pruinosis, inflorescentiis brevibus, floribus pedunculo crasso et alabastro majore (ca. 1 cm longo vs. 3–4 mm longo), differt. Ab *O. thyrsoides* Engler foliis pruinosis ovatis non obovatis, inflorescentiis brevibus, differt.

Treelet 3 m tall, branches glabrous. Leaf blades coriaceous pruinose, elliptic or ovate, 4.5–10 × 2.5–4.5 cm, apex mucronate, base obtuse or subcordate, margin entire, principal vein salient on lower surface, with 8–12 unpaired lateral veins on each side of the principal vein, ascending, evident on lower surface between the smaller, faintly evident, subparallel veins; petiole 5 mm long. Inflorescence terminal, paniculate, 3–4 cm long. Peduncle 5 mm long, thick; sepals 5, united in 2 parts (3 + 2), 9 mm long; petals 5, obovate, 10 × 5 mm (in bud); stamens 10, 8 mm long (in bud); style 9 mm long (in bud), carpels 5. Fruit not seen.

Distribution. Known only from the type collection made near Puerto Ayacucho, Amazonas state, Venezuela.

Ouratea lajaensis belongs to the same section as *O. polyantha*, *O. brevicalyx*, and *O. thyrsoides*. In this species group, *O. lajaensis* has the smallest inflorescences (3–4 cm long) and *O. brevicalyx* the smallest flowers (3–4 mm long). *Ouratea lajaensis* and *O. thyrsoides* have thick floral peduncles. *Ouratea thyrsoides* has broadly obovate leaf blades, while the leaves of *O. lajaensis* are ovate or elliptic. *Ouratea lajaensis* was found at the base of a granitic outcrop (laja) in a dry place. *Ouratea polyantha* occurs in the Colombian and Venezuelan “llanos” in damp riversides or in wet places, including along the middle of the Río Orinoco. *Ouratea brevicalyx* occurs in Venezuelan savannas near affluents of the



Figures 1–4. —1. *Ouratea lajaensis* Sastre, Sastre & Gutiérrez 8567 (holotype, P). —2. *Ouratea kanukuensis* Sastre, Jansen-Jacob et al. 262 (holotype, P). —3. *Ouratea pseudomarahuacensis* Sastre, Steyermark et al. 101785 (holotype, P). —4. *Ouratea multibracteata* Steyermark ex Sastre, Guánchez & Melgueiro 3492 (holotype, P).

upper Río Orinoco (Dept. Río Negro). *Ouratea thyrsoidea* is a riverside species occurring along the upper Rio Negro (Brazil) and in the Río Negro Department in southern Venezuela.

2. *Ouratea arborevicalyx* Sastre, sp. nov.

TYPE: Venezuela. Amazonas: Río Casiquiare, entre Curimacare y El Porvenir, 2°00'N, 66°30'W, selvas pluviales cercanas y a las orillas, 150 m, 16–27 Jan. 1987 (fl), Stergios, Aymard & Estévez 9807 (holotype, P; isotypes, MO, P, PORT).

Ab *O. brevicalyx* Maguire & Steyermark, habitu (arbor 15–25 m alta vs. frutex vel arbor parva 2–5 m altus) et nerviis inaequalibus (vs. aequalibus), differt.

Tree, 15–25 m high, stems glabrous. Leaves membranaceous, a few asymmetric, arcuate, elliptic, 7–14 cm long, 3–4.2 cm wide; base rounded, apex acute or acuminate, sometimes with an arista 2 mm long, margin undulate, crenulate; principal vein salient below, secondary veins unequal, some arcuate ascending along the margin between 3 and 10 smaller, fine, horizontal, subparallel and straight or a few arcuate, not reaching the margin; petiole 5–7 mm long. Inflorescence terminal, branching, 10–13 cm long. Peduncle 4–5 mm long; sepals 5 united in 2–3 parts, 4–5 mm long, petals 5, free, obovate, ca. 5 × 4 mm, stamen 10, sessile, 3–3.5 mm long, style ca. 3 mm long. Fruits not seen.

Ouratea arborevicalyx is allied to *O. brevicalyx* Maguire & Steyermark. It differs by the habit (tree 15–25 m high vs. shrub or small tree 2–5 m high) and the venation: secondary veins unequal vs. subequal.

Distribution. *Ouratea arborevicalyx* occurs along the Ríos Siapa and Casiquiare in rainforest, and *O. brevicalyx* occurs about 400 km to the north in the Ríos Manapiare and Ventuari region and at the base of Cerro Paru and Coro-Coro, Serrania Yutaje.

Paratypes. VENEZUELA. AMAZONAS: Río Siapa, entre la Piedra de la Natividad y la boca del Emoni, 2°15'N, 66°25'W, selvas pluviales cercanas y a las orillas, 175 m, 16–27 Jan. 1987 (fl), Stergios et al. 9902 (MO, P, PORT); entre la Piedra del Cabezón y la Piedra de la Natividad, 16–27 Jan. 1987 (fl), Stergios et al. 9865 (MO, P, PORT).

Ouratea sect. Ouratea

Inflorescence terminal; flowers with 5 sepals distinct and 5 carpels; fruits with sepals persistent and the carpels vertical.

3. *Ouratea kanukuensis* Sastre, sp. nov. TYPE: Guyana. Kanuku Mts., Rupununi River, Puhib R. near the “farm” of the Captain of the Sandcreek, along river, 03°07'N, 59°26'W, 80–100 m, 16 Feb. 1985 (fl), Jansen-Jacob et al. 262 (holotype, P; isotype, U). Figure 2.

Ab *Ouratea subamplexicauli* Maguire & Steyermark, foliis non subamplexicaulis, lamina minore (3–6 cm longa vs. 4.5–12.5 cm), inflorescentia spiciformi non paniculata, floribus majoribus (sepalis 8–9 mm longis [11 mm in fructu] vs. 0.5–0.6 mm) differt. Ab *O. mazaruniensis* A. C. Smith & Dwyer, lamina minore (3–6 cm longa vs. 4–12.5 cm), non crenulata, inflorescentia spiciformi non paniculata, floribus majoribus, fructus sepalis persistentibus differt. Ab *O. medinae* Maguire & Steyermark foliis nervis II et III anastomosantibus et bene visibilibus, fructus sepalis persistentibus, differt.

Tree, branches glabrous. Leaf blades coriaceous, 3–6 × 2–3.5 cm, ovate, apex obtuse and acuminate, base cordate or sometimes obtuse, margin entire, principal vein salient on both surfaces, secondary veins subequal, subparallel, anastomosing with the tertiary veins, salient; petiole short, 2–4 mm long. Inflorescence terminal, spicate, 6–7 cm long; peduncle 5–7 mm long; sepals 5, narrowly ovate, 8–9 × 2–3 mm; petals 5, obovate, 10–12 × 5–6 mm; stamens 11 mm long. Young fruits with peduncle 6–7 mm long, sepals persistent, 11 × 4 mm, carpels 1–3, mature fruits not seen.

Distribution. Known only from the type specimen collected in the Kanuku Mountains of Guyana.

Ouratea kanukuensis, *O. subamplexicaulis* (from Bolívar, Venezuela), *O. mazaruniensis* (from Guyana), and *O. medinae* (from Amazonas, Venezuela) are all similar in having small, cordate leaves. The first two species, with their persistent sepals in the fruit, belong to section *Ouratea*, while the two other species, with deciduous sepals, belong to section *Caducae*. *Ouratea kanukuensis* differs from *O. subamplexicaulis* by its smaller leaves (3–6 cm long vs. 4.5–12.5 cm), longer flowers (sepals 8–9 mm long vs. 5–6 mm), and its spiciform (vs. paniculate) inflorescence.

4. *Ouratea pseudomarahuacensis* Sastre, sp. nov. TYPE: Venezuela. Apure: Reserva Forestal San Camilo, Cerro Nulita, oeste de la carretera, 4.5–5 km al norte del caserío San Camilo (El Nula), a lo largo meridional del Río Nulita, selva siempreverde, 280 m, 3 Apr. 1968, J. A. Steyermark, G. Bunting & C. Blanco 101785 (holotype, P; isotype, VEN). Figure 3.

Ab *Ouratea marahuacensi* Maguire & Steyermark nervis lateralibus impressis bene visibilibus, differt. Ab *O. apurensi* Sastre nervis lateralibus impressis et flores mi-

noribus, sepalis 5–6 mm longis (vs. ca. 10 mm), differt. Ab *O. longistyla* Maguire & Steyermark foliorum laminis longioribus, nervis lateralibus bene visibilibus et sepalis fructuum minoribus 5–6 mm longis (vs. 10 mm), differt.

Tree 15 m tall, branches glabrous. Leaf blades lanceolate, 7.5–9 × 3–4 cm, apex acute, base shortly attenuate, margin serrulate, principal vein raised in a furrow on upper surface, salient on the lower surface, lateral veins impressed on both surfaces, with 8–12 unpaired lateral veins on each side of the principal vein ascending between the small, subparallel veins; petiole ca. 5 mm long. Inflorescence paniculate, terminal, 4–5 cm long. Peduncle ca. 3 mm long; sepals 5, narrowly ovate, 5–6 × 1.5–2 mm; petals narrowly elliptic, ca. 8 × 2.5 mm; stamens 10, 5.5–6 mm long, style 4 mm long. Fruits with 5 sepals, torus subspheric, 4 mm diam., carpels ellipsoid, 4.5 × 3 mm.

Distribution. Known only from the type collection made in the Reserva Forestal San Camilo, Apure state, Venezuela.

Ouratea pseudomarahuacensis is similar to *O. marahuacensis* (Amazonas, Venezuela), *O. apurensis* (Apure, Venezuela), and *O. longistyla* (Amazonas, Venezuela). The first two species have smaller flowers (less than 6 mm long) than the second two (ca. 1 cm long), and *O. pseudomarahuacensis* is the only one of the four that has an impressed vein.

Ouratea sect. **Ouratella** (Tieghem) Sastre, Bull. Mus. Natl. Hist. Nat. 4° sér. 10, sect. B Adansonia 1: 61. 1998. *Ouratella* Tieghem, Ann. Sci. Nat. Bot., sér. 8, 16: 289. 1902.

Inflorescence axillary, rarely terminal, spicate or paniculate; flowers with 5 distinct sepals and 5 carpels; fruit with carpels vertical.

5. Ouratea stipulata (Vellozo) Sastre, comb. nov.
Basionym: *Ochna stipulata* Vellozo, Fl. Flum.: 210. 1825. TYPE: Vellozo, Fl. Flum.: tab. 91.

6. Ouratea multibracteata Steyermark ex Sastre, sp. nov. TYPE. Venezuela. Amazonas: Dept. Atures, riberas del Río Autana, en el remanso del raudal "Cegüera," 4°48'N, 67°28'W, bosque ribereño, 100 m, 11 nov. 1984, F. Guánchez & E. Melgueiro 3492 (holotype, P; isotype, VEN not seen). Figure 4.

Ab *Ouratea soderstromii* Sastre, inflorescentiis magnis, 15–20 cm longis (vs. 6–8 cm), ramosissimis, differt. Ab *Ouratea stipulata* inflorescentiis magnis (15–20 cm longis vs. 2–4 cm), paniculatis, axillaribus et laminis magnis (10–15 cm longis vs. 3.5–5 cm), differt.

Tree 6–8 m tall, branches glabrous. Leaf blades chartaceous, 10–15 × 4–6 cm, oblong-elliptic, apex acuminate, base obtuse, margin crenulate, principal vein salient on the lower surface, lateral veins unequal, some arcuate ascending between smaller, fine, parallel, and straight ones; petioles 9–11 mm long. Inflorescence paniculate, axillary, or terminal on secondary branches, 15–20 cm long. Bracts many, persistent, strongly appressed, 2–2.5 × 1 mm, oblong-lanceolate, acute; peduncle 6–11 mm long, with 1–3 small bracts ca. 1 mm long; sepals 5, ca. 4 × 1.5–1.8 mm, lingulate, obtuse; petals 5, subflabelliform, ca. 4 × 5.5 mm, rounded at summit; stamens 10, apiculate, ca. 5 mm long; style 4 mm long. Fruit with torus disciform, 10-lobed, 0.5 × 1.5 mm, immature carpels 0.5 mm long.

Distribution. Known only from the type locality, along the Río Autana, Amazonas, Venezuela.

With small flowers as in *Ouratea soderstromii* Sastre, *O. multibracteata* is near a species group occurring in southern Brazil. *Ouratea multibracteata* has some persistent and setaceous bracts as in *O. stipulata*, but differs by its longer inflorescences (15–20 cm long vs. 2–4 cm) and longer leaves (10–15 cm vs. 3.5–5 cm). *Ouratea multibracteata* differs from *O. soderstromii*, from Guyana and Venezuela (Bolívar, Río Caroní region), by its large and many-branched inflorescences (vs. unbranched or few-branched and 6–8 cm long).

7. **Ouratea heterobracteata** Sastre, sp. nov.

TYPE: Venezuela. Amazonas: Río Guainía, sabanita at Victorino, 135 m, 14 Apr. 1953, B. Maguire & J. J. Wurdack 35706 (holotype, P; isotype, NY). Figure 5.

Ab *Ouratea ferruginea* Engler, foliis ovatis (oblongis ad obovatis), inflorescentiis axillaribus ramosis, alabastris parvis 5 mm longis (vs. 10 mm) differt.

Treelet 3 m tall, stems pilose. Leaf blades ovate, 25–34 × 4.5–8 cm, apex acute, base attenuate, margin serrulate, principal vein salient on the lower surface, some lateral veins ascending and salient on lower surface between smaller subparallel ones; petiole thick, 1–1.5 cm long. Inflorescence axillary, paniculate, 12–16 cm long, axis pilose, hairs unicellular, ca. 1 mm long; bracts, at the base, 2–3; scales 3.5–6 × 2–4 mm, paired, united at the base with an arista between them, borne at the base of the lower branches of the inflorescences; scales 3–4 × 1–3 mm, paired, entirely united, with or without arista borne near the summit of the inflorescence. Peduncle ca. 5 mm long, pubescent, with short hairs ca. 0.1 mm long; sepals 5, elliptic-ovate,



Figures 5–8. —5. *Ouratea heterobracteata* Sastre, Maguire & Wurdack 35706 (holotype, P). —6. *Ouratea vieirae* Sastre, Vieira et al. 122 (holotype, P). —7. *Ouratea papulosa* Sastre, Eupunino 184 (holotype, P). —8. *Ouratea orisina* Sastre, Stergios 10718 (holotype, MO).

6×2 mm; petals 5, spatulate, $8-9 \times 5$ mm; stamens 10, 5 mm long; carpels 5, velvety, style 3.5–4 mm long. Fruit glabrous with peduncle ca. 7 mm long, torus subclaviform, curved, carpels ovoid, $7 \times 4-5$ mm.

Distribution. Known only from the type collection made along the Río Guainía, Amazonas, Venezuela.

Because of the pilose inflorescence and shape of the fruit, the type collection was originally identified as *O. ferruginea* Engler (sect. *Caducae*), an Amazonian species also occurring in Venezuela. However, *Ouratea heterobracteata*, with its two types of bracts, its small buds, and its ramified axillary inflorescences, is quite distinct from *O. ferruginea*.

Ouratea sect. **Caducae** Sastre, Novon 5: 194. 1995.

Inflorescence terminal; flowers with 5 sepals and 5 carpels; fruits with carpels vertical and without sepals.

WITH SPICATE INFLORESCENCES

8. Ouratea vieirae Sastre, sp. nov. TYPE: Brazil. Amazonas: Transamazônica-Trecho de Humaitá-Itaituba, Km 135 de Humaitá, perto do Km 895 da Transamazônica, $8^{\circ}7.5'S$, $61^{\circ}49'W$, campina de areia branca, 24 Sep. 1979 (fr), Vieira et al. 122 (holotype, P; isotypes, INPA, NY). Figure 6.

Ab *Ouratea verruculosa* Engler foliis minoribus (7–10 cm longis vs. 15–28 cm), nervis II et III paucis visilibus et excretis papillosis et non verrucosis, differt. Ab *O. ferruginea* Engler foliis minoribus (7–10 cm longis vs. 15–25 cm), nervis II et III paucis visilibus et excretis translucidis, differt.

Shrub 1.5 m tall, branches glabrous. Leaf blades coriaceous, $7-10 \times 2.5-4$ cm, ovate, apex acuminate, base attenuate, margin serrulate, undulate, principal vein salient on lower surface, lateral veins faintly evident, with 6–8 unpaired arcuate veins on each side of principal vein, with fine, parallel intersecondaries; petiole 3–4 mm long. Inflorescence terminal, spicate, short, 2–5 cm long, axes papillate. Flowers not seen. Fruits with cylindrical carpophore 6 mm diam., 4 mm high, carpels 1 or 2, subspherical ca. 3 mm diam., peduncle 9–10 mm long.

Distribution. Known only from the type collection made in the Rio Madeira basin, Amazonas, Brazil.

Ouratea vieirae, with its terminal, spicate inflo-

rescence with papillate axes, is in the same species group as *O. verruculosa* from Rio Negro (Brazil) and *O. ferruginea*, occurring in Brazil, Colombia, and Venezuela. It differs from those species by having smaller leaves (7–10 cm long vs. 15–28 cm) and only faintly evident lateral veins.

9. Ouratea papulosa Sastre, sp. nov. TYPE: Brazil. Bahia: S. Cruz de Cabralia, Res. Biol. Pau-Brasil, 24 Jan. 1972 (fl), A. Eupunino 184 (holotype, P; isotype, NY). Figure 7.

Ab *Ouratea verruculosa* Engler, nervis lateralibus inaequalis, petiolo majore et excretis papillosis vs. verrucosis differt.

Shrub or small tree, 1–5 m tall, branches glabrous. Leaf blades coriaceous, elliptic, $10-26 \times 3.5-7$ cm, apex acuminate, base attenuate or rounded, margin undulate, crenulate, principal vein salient on the lower surface with 15–20 unpaired lateral veins on each side of the principal vein, ascending, impressed between the small, subparallel, impressed veins; petiole 8–15 mm long, thick. Inflorescence terminal, spicate, 2–13 cm long, axes papillate. Peduncle papillate, 5–6 mm long; sepals 5, ovate, $5-6 \times$ ca. 2 mm; petals 5, obovate, $9-10 \times 4-5$ mm, stamens 10, 5–6 mm long, mucronate; style 5–6 mm long. Fruits with papillate peduncle, carpophore subconical, 4–5 mm high, 6–7 mm diam., carpels 1–2, ovoid, ca. 1 cm high.

Distribution. Bahia, Brazil.

The type and paratypes of *Ouratea papulosa* were previously determined as *O. verruculosa*, a species found along the Rio Negro in northern Brazil. *Ouratea papulosa* differs from *O. verruculosa* by the secondary veins not subequal, the length of the petiole (8–15 mm vs. 5–6 mm), and by having papillate (vs. tuberculate) inflorescence axes and peduncles. *Ouratea papulosa* and *O. vieirae* belong to a group in the section *Caducae* that is characterized by spicate inflorescences with papillate, verrucose, or ferruginous axes.

Paratypes. BRAZIL. Bahia: Santa Cruz de Cabralia, Reserva Biológica de Pau-Brasil, 15 Sep. 1971 (fl), T. S. Santos 1927 (NY, P), 30 Sep. 1971 (fl), A. Eupunino 8 (NY, P); 7 km NE estação, 80–100 m, $16^{\circ}23'S$, $39^{\circ}8'W$, 14 Aug. 1979 (fl), S. Mori et al. 12174 (NY, P); Porto Seguro, Parque Nacional, 6 Apr. 1972 (fr), R. S. Pinheiro 1821 (NY, P); Saida de Eunapolis a Porto Seguro, mata costeira, 23 Sep. 1968 (fl), Almeida & Santos 78 (K, P); Rôdovia BR5, 16 km S Eunapolis, 28 Sep. 1966, Belém & Pinheiro 2670 (P, UB).

- 10. *Ouratea orisina* Sastre, sp. nov.** TYPE: Venezuela. Bolívar: Medio Río Paragua, Medio Río Oris, en las alrededores del Campamento Turumbán. $6^{\circ}21'36''N$, $63^{\circ}45'27''W$, selvas húmedas, ribeñeras y de lomerío, 300 m, 13 May–13 June (fr), B. Stergios 10718 (holotype, MO; isotype, PORT). Figure 8.

Ab *Ouratea culminicola* Maguire & Steyermark lamina obovata, margine undulata non serrata, nervis lateralibus inaequalibus, nervis III paucis visibilibus differt.

Tree, branches glabrous. Leaf blades obovate, $10.5–17 \times 3–5.5$ cm, base attenuate, apex acuminate, margin undulate, principal vein salient on both surfaces with 11–13, unpaired, lateral, arcuate veins on each side with fine and subparallel intersecondaries, tertiary veins faintly evident. Inflorescence spiciform, terminal, 8 cm long. Flowers not seen. Fruit with a subspheric torus ca. 5 mm diam., carpels ellipsoid, 7×6 mm.

Distribution. Known only from the type collection made at the middle Río Oris, Bolívar, Venezuela.

Ouratea orisana is similar to *O. culminicola* but differs by having leaves with undulate margins and two distinct types of lateral veins (vs. leaves with serrate margins and subequal lateral veins). Both species occur in the Río Paragua Basin in Bolívar state, *O. orisana* along the Río Oris at 300 m elevation and *O. culminicola* near the Río Carapo on the plateau of Cerro Guaiquinima, at 730–750 m elevation.

Ouratea sect. Cadueae

WITH SHORT PANICULATE INFLORESCENCES

- 11. *Ouratea saldariagae* Sastre, sp. nov.** TYPE: Venezuela. Amazonas: San Carlos de Río Negro, ca. 20 km S of confluence of Río Negro and Brazo Casiquiare, 4.3 km NNE of San Carlos on Solano road, IVIC main study site, $1^{\circ}59'N$, $67^{\circ}03'W$, 119 m, 28 Jan. 1983 (fr), J. Saldariaga s.n. (holotype, MO). Figure 9.

Ab *Ouratea melinonii* Van Tieghem foliis coriaceis petiolatis, non sessilis, $5.5–9.5$ cm longis vs. $8–16$ cm et inflorescentiis brevibus (2.5 cm vs. 3–10 cm) differt.

Tree 12 m tall, branches glabrous. Leaf blades coriaceous, elliptic-obovate, undulate, $5.5–9.5 \times 1.7–4$ cm, apex acuminate, base attenuate, margin crenulate, principal vein salient on the lower surface with 6–8 unpaired lateral veins on each side of the principal vein, ascending, salient on lower surface, sunken on upper surface between the

small, subparallel veins, a few salient on lower surface; petiole 6–8 mm long. Inflorescence terminal, spicate or paniculate, 2.5–3 cm long, axes papillate. Flowers not seen. Fruit peduncle papillate, 1–1.2 cm long, carpophore subcylindric, 5–8 mm high, 9–11 mm diam., carpels 1, ovoidal, 8×5 mm.

Distribution. Known only from the type collection made near San Carlos de Río Negro, Amazonas, Venezuela.

Ouratea saldariagae is similar to *O. melinonii* Tieghem from French Guiana and Suriname, but differs from it by having smaller, petiolate leaves (5.5–9.5 cm long vs. 8–16 cm and sessile) and smaller inflorescences (2.5 cm long vs. 3–10 cm).

- 12. *Ouratea pulverulenta* Sastre, sp. nov.** TYPE: Venezuela. Amazonas: Dpto. Atabapo, transecto desde campamento del MARNR en Ocamo (Santa María de Los Guaicas), $2^{\circ}50'N$, $65^{\circ}14'W$, 135–140 m, 12 Nov. 1982, F. Guánchez 2188 (holotype, P; isotype, MO). Figure 10.

Ab *Ouratea saldariagae* Sastre foliis pulverulentis pagina superiore, pruinosis pagina inferiore, nerviis subaequalibus, fructus pedunculo glabro, toro ca. 3 mm diam. vs. 9–11 mm, differt.

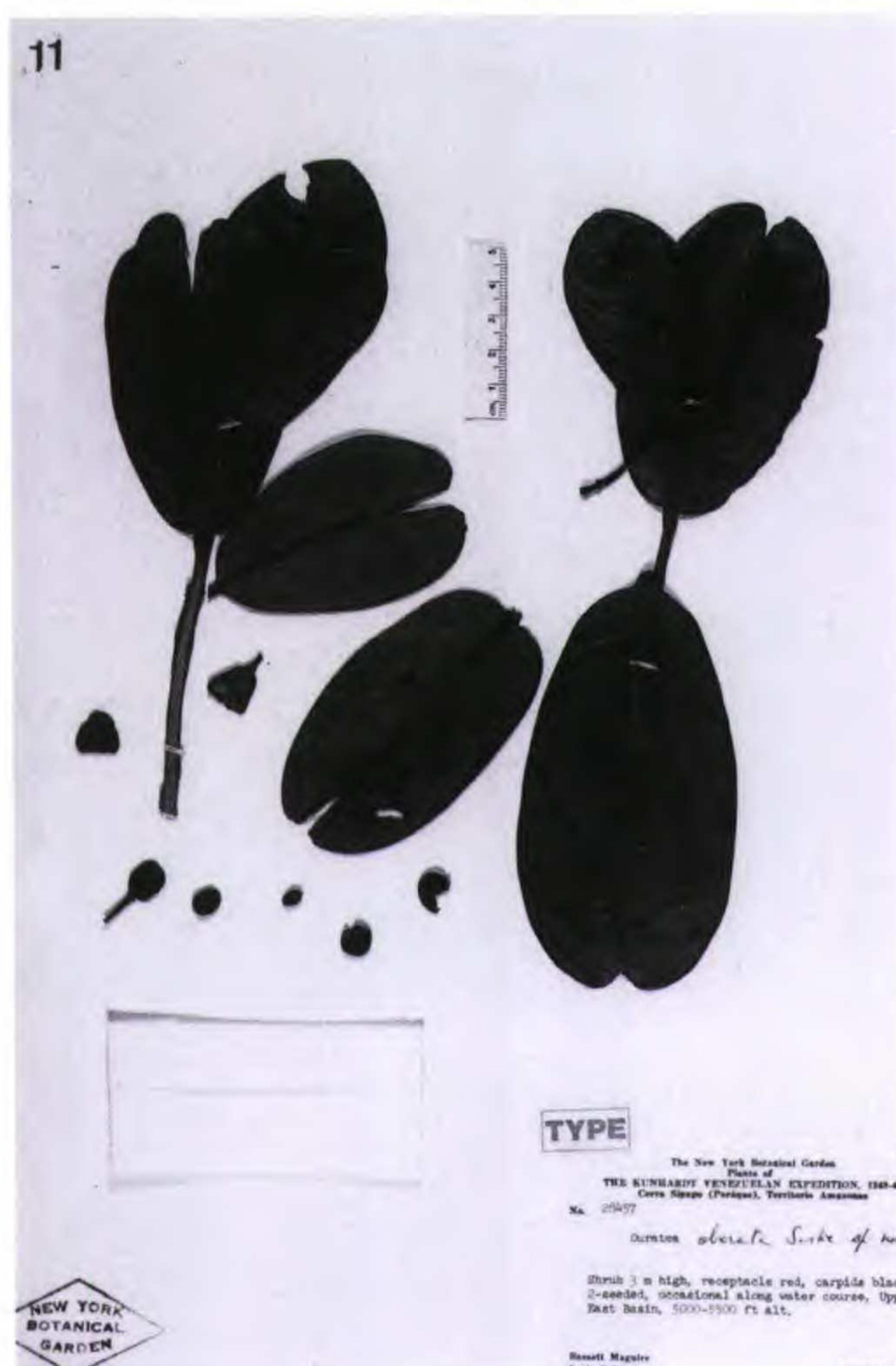
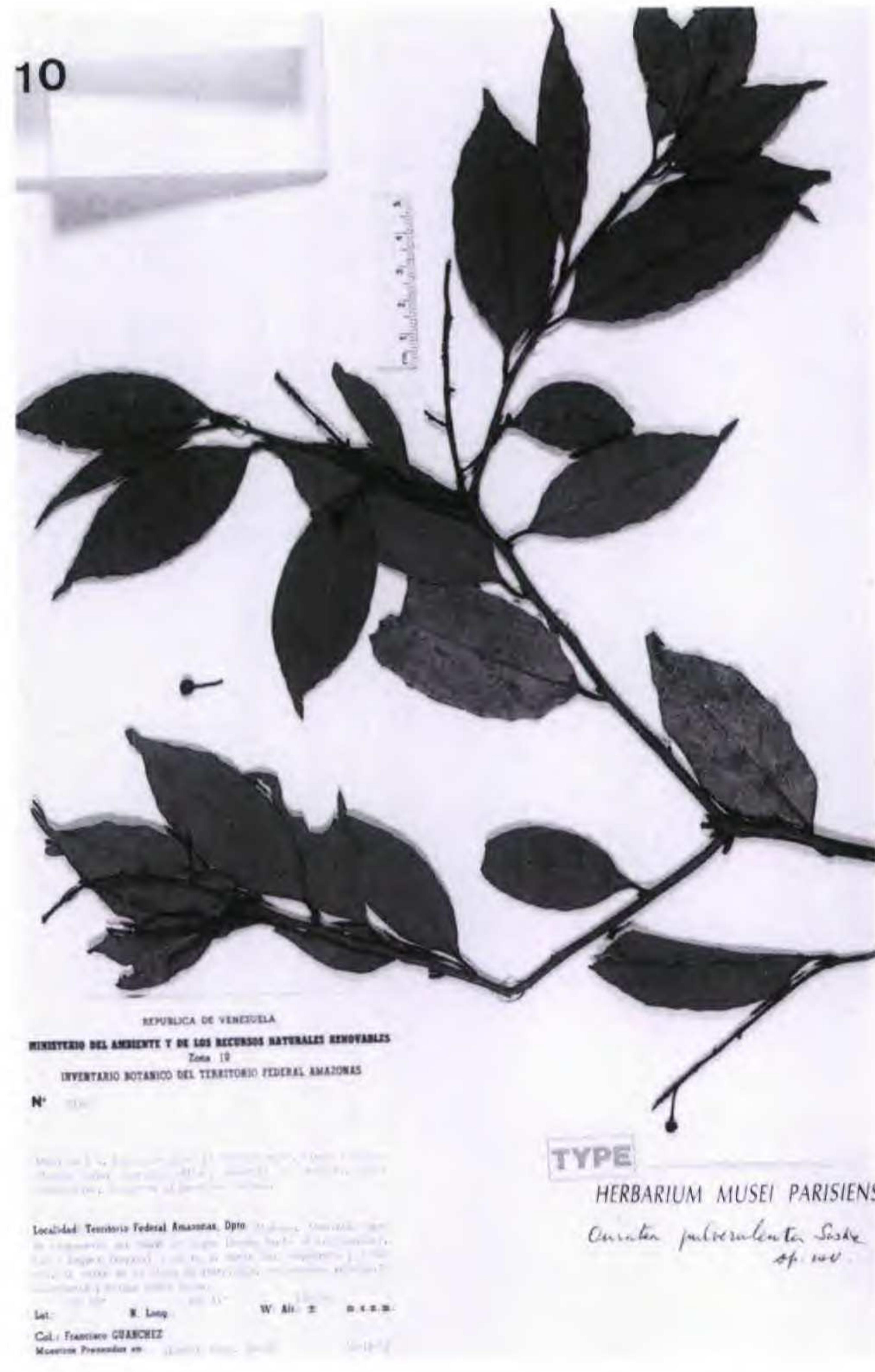
Tree 5 m tall, branches glabrous. Leaf blades coriaceous, undulate, pulverulent on upper surface, pruinose on lower surface, elliptic, $6–9 \times 2–3$ cm, apex acuminate, base attenuate, margin entire, principal vein salient above, lateral veins subequal. Inflorescence terminal, paniculate, 4–6 cm long, flowers not seen. Torus subcylindric, mammillate, 2 mm high, 3 mm diam., carpels not seen.

Distribution. Known only from the type collection made near the Río Ocamo, Amazonas, Venezuela.

Ouratea pulverulenta is characterized by pulverulent leaves and the very small torus in the fruit. It resembles *O. saldariagae* also from near San Carlos de Río Negro, Amazonas, Venezuela, but differs by having pulverulent-pruinose (vs. glabrous) leaves, a mammillate (vs. papillate) peduncle, and a 2×3 mm torus (vs. $5–8 \times 9–11$ mm).

- 13. *Ouratea obovata* Sastre, sp. nov.** TYPE: Venezuela. Amazonas: Dept. Atures, Cerro Sipapo (Paraque), upper East Basin, along water course, 5000–5500 ft., 20 Jan. 1949, B. Maguire & L. Politi 28457 (holotype, NY; isotype, VEN). Figure 11.

Ab *Ouratea yapacana* Sastre, laminis 7–12 cm longis,



Figures 9-12. —9. *Ouratea saldariagae* Sastre, Saldariaga s.n. (holotype, MO). —10. *Ouratea pulverulenta* Sastre, Guánchez 2188 (holotype, P). —11. *Ouratea obovata* Sastre, Maguire & Politi 28457 (holotype, NY). —12. *Ouratea megaphylla* Sastre, Castillo 2341 (holotype, P).

4.5–6 cm latis (vs. 10–12 × 2.5–3 cm), glabris, non revolutis, inflorescentia terminali, differt. Ab *O. platicauli* Sastre, ramis teretibus, laminis 7–12 cm longis, 4.5–6 cm latis (vs. 13–15 × 4–5 cm), inflorescentia terminali, differt.

Shrub 3 m tall, branches glabrous. Leaf blades coriaceous, 7–12 × 4.5–6 cm, obovate, flat, apex retuse to emarginate, base obtuse to truncate, margin entire, a few revolute, principal vein salient above, lateral veins subequal, subparallel and anastomosing with the tertiary veins; petiole very short, 1–2 mm long. Inflorescence paniculate, terminal, 4–6 cm long. Flowers not known. Fruits with torus conical, 13–14 mm high, 12–13 mm wide, carpels obovate, 9 × ca. 7 mm, peduncle ca. 1.5 cm long.

Distribution. Known only from the type collection from Cerro Sipapo, Amazonas, Venezuela, at 1525–1675 m elevation, along a water course (*O. sipapoensis* Maguire & Steyermark is known near the summit at 1700–1800 m alt. in thickets).

With its obovate leaves, *Ouratea obovata* resembles *O. yapacana* Sastre from Venezuela (Amazonas, Cerro Yapacana) and *O. platicaulis* Sastre from Bahia, Brazil, but differs from both of them by having terminal (vs. axillary) inflorescences.

Ouratea sect. Caducae

WITH LARGE PANICULATE INFLORESCENCES

14. *Ouratea fusiformis* Sastre, sp. nov. TYPE:
Venezuela. Amazonas: Selvas pluviales cerca y en las orillas del Río Casiquiare, entre Curimacare y Buena Vista, 2°00'N, 66°33'W, 150 m, 20–30 Oct. 1986 (fr), B. Stergios et al. 9652 (holotype, P; isotypes, MO, PORT). Figure 13.

Ab *Ouratea macrocarpa* Sastre, pedunculo saepe papilloso, lamina membranacea, nerviis III paucis visibilibus pagine superiore, sepalis ca. 13–14 mm longis (vs. 8 mm), petalis ca. 16 mm longis (vs. 9 mm), carpellis fructus fusiformibus 14 × 7 mm (vs. ellipsoidis 20 × 13 mm), differt. Ab *O. coccinea* Engler, lamina membranacea, margine subintegra, sepalis ca. 13–14 mm longis (vs. 6 mm longis), petalis 16 mm longis (vs. 7 mm longis), differt. Ab *O. sipapoensis* Maguire & Steyermark, pedunculo saepe papilloso, lamina membranacea, margine sub-integra, sepalis ca. 14 mm longis (vs. 10–11 mm), petalis ca. 16 mm longis (vs. 10–11 mm longis), fructus carpellis fusiformibus (vs. ovoideis), differt.

Shrub or tree, 2–15 m tall, branches glabrous. Leaf blades membranaceous, elliptic to oblong, 23–29 × 7–9.5 cm, apex acuminate, base subcordate to obtuse, margin denticulate, principal vein salient on lower surface, lateral veins subequal and tertiary veins faintly evident on upper surface; petiole thick, 7–10 mm long. Inflorescence paniculate, ter-

minal, 10–25 cm long, the peduncle often papillate, 14–15 mm long. Sepals 5, ovate, 13 × 5 mm; petals 5, obovate, 16 × 9 mm; stamens 10, anthers 12 mm long; style 10–11 mm long. Fruit with carpophore conical, 10–11 mm long, papillate, carpels fusiform, 14 × 7 mm.

Distribution. Southwestern Amazonas, Venezuela, in the upper Río Orinoco and Río Negro basins at 150–200 m elevation.

With its large leaves, *Ouratea fusiformis* is similar to *O. macrocarpa* Sastre (Fig. 14) from tall, lowland forests of the Guianas, *O. coccinea* Engler from the Amazon Basin, and *O. sipapoensis* from Cerro Sipapo in Amazonas, Venezuela, at 1450–1800 m elevation. *Ouratea fusiformis* differs, however, by its membranaceous leaves and its larger flowers, sepals 12 mm long, and petals 16 mm long (vs. respectively sepals = 8 mm, 6 mm, and 10–11 mm, petals = 9 mm, 7 mm, and 10–11 mm) and its fruiting carpels fusiform in shape (vs. ellipsoid or ovoid).

Paratypes. VENEZUELA. Amazonas: Dept. Río Negro, Río Yatua, 125 m, 1°30'N, 66°5'W, 13 Apr. 1970, Steyermark & Bunting 102639 (NY, P, VEN), selva pluvial del bajo Río Yatua, 25 July 1982, Stergios & Aymard 4141 (MO, PORT), entre la boca y la piedra Catipán, 1°25'N, 66°25'W, 1–2 Dec. 1984, Stergios & Aymard 7486 (MO, P, PORT); Caño Tama Tama, right bank of Río Orinoco, 125 m, 13 June 1942, Williams 15858 (US), 150 m, 23 June 1959 (fl), Wurdack & Adderley 43144 (MO, NY, P, VEN); Río Baría, 140 m, 0°55'N, 66°16'W, 10 May 1984, Gentry & Stein 47335 (MO, P), from Los Tambores of Comision de Limite to Caño Erubichi, 130 m, 1°02'N, 66°22'W, 2 Apr. 1984, Liesner 17104 (MO, P), Río Mararinuma, 1°05'N, 66°35'–45'W, 9 May 1984, Thomas et al. 3440 (NY, P).

15. *Ouratea megaphylla* Sastre, sp. nov. TYPE:
Venezuela. Amazonas: Dept. Atures, Puerto Ayacucho, Río Cataniapo entre la comunidad de las Pavas y Raudal Rabipelado, 6°25'N, 67°25'W, 90–100 m, 11 Apr. 1987 (fl), A. Castillo 2341 (holotype, P; isotype, VEN). Figure 12.

Ab *Ouratea longifolia* (Lamarck) Engler, petiolo et nervi principalis base canaliculatis, lamina 35–45 cm longa (vs. 20–30 cm), inflorescentia 23–30 cm longa (vs. 5–20 cm), carpellis fructus ovoideis 10 × 5 mm (vs. meloniformibus 13–19 × 10–15 mm), differt. Ab *O. fusiformis* Sastre, petiolo et nervi principalis base canaliculatis, lamina 35–45 cm longa (vs. 23–29 cm), sepalis 10–11 mm longis (vs. 14 mm), toro fructus globoso differt.

Treelet 5–10 m tall, branches glabrous. Leaf blades coriaceous, oblong to ovate, 35–45 × 8–12.5 cm, apex acuminate, base obtuse, margin denticulate, principal vein salient on lower surface, canaliculate near the petiole on upper surface, lat-



Figures 13–16. —13. *Ouratea fusiformis* Sastre, Stergios et al. 9652 (holotype, P). —14. *Ouratea macrocarpa* Sastre, De Granville 44 (holotype, P). —15. *Ouratea maguirei* Sastre, Maguire et al. 36216 (holotype, P). —16. *Ouratea rorida* Sastre, Steyermark 89463 (holotype, P).

eral veins subequal; petiole canaliculate, ca. 1 cm long. Inflorescence paniculate, terminal, 23–30 cm long, the peduncle ca. 1 cm long, glabrous. Sepals 5, ovate, 10–11 × 2–3 mm, undulate, papillate along the principal veins on upper surface. Young petals 5, ovate, 10 × 3 mm; young stamens 10, 6 mm long, style 5 mm long. Fruit with carpophore globose, 7 mm diam., carpel ovoid, 10 × 5 mm.

Distribution. Along the Río Cataniapo in Amazonas, Venezuela, at 90–110 m elevation.

Ouratea megaphylla is similar to *O. longifolia* (Lamarck) Engler from the Lesser Antilles (Guadeloupe and Dominica) and *O. fusiformis* Sastre (Venezuela, Amazonas). *Ouratea megaphylla* is characterized by its very large leaves and its canaliculate petiole; it differs from *O. longifolia* by the size of the inflorescence (25–30 cm vs. 5–20 cm) and the form of the fruiting carpels (ovoid vs. meloniform), and from *O. fusiformis* by the size of the flower (sepals 10–11 mm long vs. 14 mm) and the form of the fruiting torus (globose vs. fusiform).

Paratypes. VENEZUELA. AMAZONAS: Dept. Atures, Puerto Ayacucho, Río Cataniapo entre Raudal Buasaujaka y comunidad de las Pavas, 6°25'N, 67°25'W, en bosque húmedo, 90–100 m, 13 Aug. 1986, Castillo 2211 (P, VEN), desde el lugar de la futura represa hasta el caserío San Pedro de Cataniapo, 5°38'N, 67°11'W, en bosque alto denso, 90–110 m, 5 Aug. 1980 (fr), Guanchez 111 (MO, VEN).

16. *Ouratea maguirei* Sastre, sp. nov. TYPE: Venezuela. Amazonas: laja on right bank of Caño Cupueru, right bank of Río Orinoco opposite mouth of Río Atabapo, 100 m, 12 Nov. 1953, B. Maguire, J. J. Wurdack & G. S. Bunting 36216 (holotype, P; isotypes, NY, VEN). Figure 15.

Ab *Ouratea kananariensis* Sastre, lamina margine denticulata (vs. serrata), alabastris conicis (vs. globosis), sepalis 9–10 mm longis (vs. 6 mm longis), differt. Ab *O. coccinea* Engler, laminam nervis secundaris inaequalibus cum ca. 15 magnis inter nervis subparallelis tenues transversales (ca. subparallelis), sepalis 9–10 mm longis (vs. 6 mm longis), differt.

Treelet, 5 m tall, branches glabrous. Leaf blades coriaceous, (13–)22–27 × 6–8.5 cm, undulate, obovate to elliptic, apex obtuse and strongly acuminate, margin denticulate, principal vein salient on lower surface, some lateral veins ascending, impressed on upper surface and salient on lower surface, not salient between smaller veins; petiole 1 cm long. Inflorescence terminal, paniculate, 7–22 cm long, axis papillate, the first branches subtended by a 4 × 4 bifid scale. Pedicels ca. 10 mm long, not regularly papillate; sepals 5, sometimes papil-

late, ovate-subtriangular, 9–10 × 3–3.5 mm; petals 5, spatulate, 13–14 × 8 mm; stamens 10, 5 mm long; style 7 mm long. Fruit not seen.

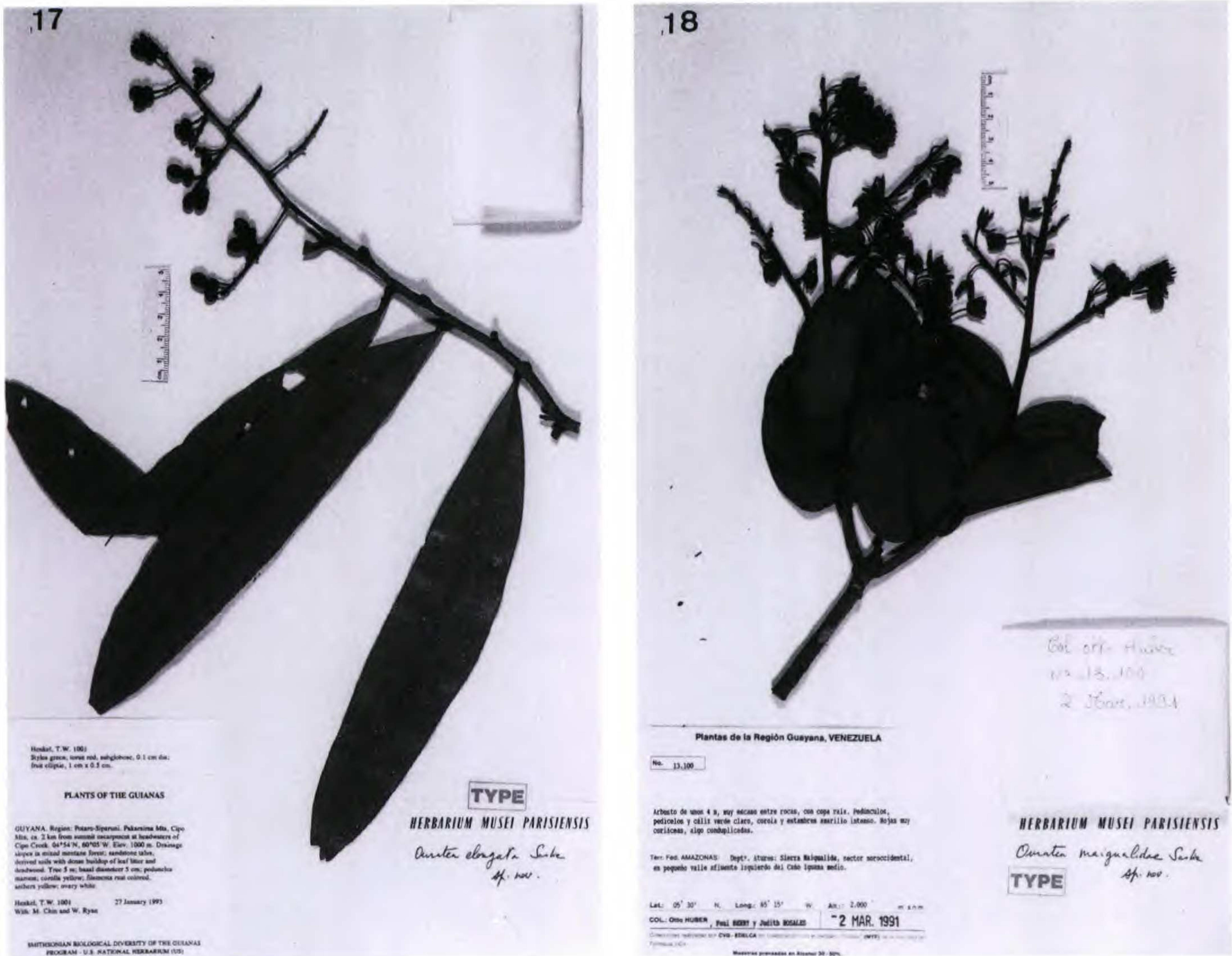
Distribution. Known only from the type collection from San Fernando de Atabapo, Amazonas, Venezuela.

Ouratea maguirei is similar to *O. kananariensis* Sastre described from Río Kananari, Vaupés, Colombia, and collected by me near La Chorrera, Río Igara-Paraná, Amazonas, Colombia, and *O. coccinea* from the Amazon Basin. *Ouratea maguirei* differs from *O. kananariensis* by the denticulate (vs. serrate) margin of the leaves, the conical (vs. globose) flower buds, and larger flowers (sepals 9–10 mm long vs. 5–6 mm; petals 13–14 mm long vs. 9 mm). *Ouratea maguirei* was found growing on a granitic outcrop (laja), while *O. kananariensis* is on quartzitic outcrops and sandy soils. *Ouratea maguirei* differs from *O. coccinea* by the secondary venation of the leaves: unequal with ca. 15 paired large veins between smaller veins in *O. maguirei*, subequal in *O. coccinea*. Flowers of *O. maguirei* are bigger; the sepals are 10–11 mm long (vs. 6 mm).

17. *Ouratea rorida* Sastre, sp. nov. TYPE: Venezuela. Bolívar: Sierra de Lema. Cabeceras de Río Chicanán, 80 km al suroeste de El Dorado, 6°5'N, 62°W, rainforest in valley lowland, 300 m, 24 Aug. 1961 (fl), J. A. Steyermark 89463 (holotype, P; isotypes, NY, VEN). Figure 16.

Ab *Ouratea guianensis* Aublet, nervis lateralibus paucis prominentibus, alabastris 5 mm longis (vs. 7–8 mm), fructibus sepalis caducis, toro globoso 3–4 mm diam. (vs. lenticulari 4 mm alto, 8 mm diam.), carpellis 5–6 × 8 mm (vs. 15 × 10 mm), differt. Ab *O. microcalyx* (Engler) Sastre, foliarum epidermide rorida, nervis lateralibus paucis prominentibus non subparallelibus, alabastris 5 mm longis (vs. 7 mm), differt.

Tree or treelet, 3–15 m tall, branches glabrous. Leaf blades membranous, 18–23 × 5.5–8.5 cm, elliptic-obovate, epidermis covered with small, transparent tubercles that have the appearance of fine drops of dew, apex acuminate, base attenuate, margin undulate, denticulate with very small black teeth, principal vein salient on lower surface, lateral veins faintly salient on both surfaces, with some arcuate-ascending between the smaller, subparallel ones; petiole 1 cm long. Bracts on the young inflorescences triangular, 2–4 × 1–2 mm, aristate. Sepals 5, ovate, 5–5.5 × 1.5–2.5 mm; petals 5, spatulate, 4.5 × 6 mm; stamen 10, tuberculate, 3.5 mm long, carpels 5, style ca. 3 mm long. Fruit torus globular, 3–4 mm diam., carpels 5–6 × 8 mm.



Figures 17, 18. —17. *Ouratea elongata* Sastre, Henkel et al. 1001 (holotype, P). —18. *Ouratea maigualidae* Sastre, Huber et al. 13100 (holotype, P).

Distribution. Northern Bolívar and northern Amazonas states, Venezuela.

Ouratea rorida has been confused with *Ouratea guianensis* Aublet (sect. *Ouratea*, from Maranhão, Brazil, to Delta Amacuro, Venezuela) and with *O. microcalyx* (Engler) Sastre (sect. *Caducae*) from Guyana. *Ouratea rorida* differs from the two latter species by having the secondary and tertiary nerves only slightly salient on both surfaces and by its small flowers (5 mm long vs. 7–8 mm long in *O. guianensis* and 7 mm long in *O. microcalyx*). *Ouratea rorida* has its epidermis minutely tuberculate as *O. guianensis* but its fruits do have persistent sepals as *O. microcalyx*.

Paratypes. VENEZUELA. Bolívar: along Río Caura ca. 10 km SSE of Las Pavas (Salto Para), 6°11'N, 64°25'W, primary forest and river edge, 240 m, 6 May 1982, Liesner & Morillo 13886 (VEN), 2–8 km Sur del Salto Para, bosque húmedo ripario, 10 May 1982, Morillo & Liesner 9089 (MO, P, VEN); Medio Río Paragua, Medio Río Oris, en los alrededores del campamento Turumbán, 6°21'N, 63°45'W, selvas húmedas ribeñeras y de lomerío, 300 m, 13 May–13 June 1987 (fr), Stergios 10718 (P, PORT). Amazonas: Dpto. Atures, 1–2 km of Río Coro-Coro, W of Serranía de Yutaje, 5°43'N, 66°07'W, forested

slope, 400–550 m, 25 Feb. 1987, Liesner & Holst 21403 (MO, P).

18. *Ouratea elongata* Sastre, sp. nov. TYPE: Guyana. Potaro-Siparuni Region, Pakaraima Mountains, Cipo Mountain, ca. 2 km from summit escarpment at headwater Cipo Creek, 4°54'N, 60°05'W, drainage slopes in mixed montane forest, sandstone talus, 1000 m, 27 Jan. 1993, T. W. Henkel, M. Chin & W. Ryan 1001 (holotype, P; isotype, US). Figure 17.

Ab *Ouratea patenti* Engler, foliis petiolo 0.5 cm longo (vs. 1 cm), nervo principali non prominenti pagina inferiore, nervis lateralibus pauci visibilibus, impressis pagina inferiore, margine serrulato, differt.

Tree, 5 m tall, stems glabrous. Leaf blades coriaceous, 23–25 × 4–4.5 cm, ovate, elongate, a few falciform, apex not seen, base attenuate, margin serrulate, principal vein salient on upper surface, sunken on lower surface, some lateral veins arcuate between smaller, straight ones, all salient on upper surface, impressed on lower surface, tertiary veins not visible; petiole ca. 0.5 cm long. Flowers not

seen. Fruits with torus discoidal, 5–6.5 mm diam., 3.5–4 mm high.

Distribution. Known only from the type from Cipo Mountain, Pakaraima Mountains, Guyana.

Ouratea elongata is similar to *O. patens* Engler from the Rio Negro, Brazil, but differs by having a shorter petiole (5 mm long vs. 10 mm) and the principal nerve salient on the upper surface and sunken on the lower surface (vs. salient on both surfaces), and the margins serrulate (vs. entire).

19. *Ouratea maigualidae* Sastre, sp. nov. TYPE:

Venezuela. Amazonas: Dept. Atures, Sierra Maigualida, sector noroccidental, en pequeño valle, afluente izquierdo del Caño Iguana medio, 5°30'N, 65°15'W, entre rocas, 2000 m, 2 Mar. 1991 (fl), O. Huber, P. Berry & J. Rosales 13100 (holotype, P; isotype, MYF). Figure 18.

Ab *Ouratea roraimae* Engler, basi laminae cordata, nervis lateralibus impressis, alabastris majoribus (ca. 8 mm longis vs. 5–6 mm), differt. Ab *O. sipapoensi* Maguire & Steyermark, laminis minoribus (6–9 × 4–7 cm vs. 11–14 × 5.5–9 cm), bene ovatis, base bene cordata, nervis lateralibus impressis, petiolo ca. 3 mm longo (vs. 8–10 mm), fructus toro applanato (vs. turbinato), differt.

Shrub or treelet, 1.5–4 m tall, stems glabrous. Leaf blades coriaceous, ovate, 6–9 × 4–7 cm, base cordate, margin entire, apex somewhat acuminate or retuse, principal vein salient above, secondary veins impressed unequal, the longer arcuate between smaller straight ones, anastomosed with the faintly evident tertiary veins; petiole ca. 3 mm long. Inflorescence paniculate, terminal, 8–15 cm long. Peduncle ca. 1 cm long; sepals 5, oblong, 9 × 4 mm, persisting briefly after anthesis; petals 5, spatulate, 10 × 9 mm, stamens 10, 5 mm long; style 6 mm long. Immature fruit with torus flattened, 5 mm diam., 2 mm high.

Distribution. Known only from the Sierra Maigualida, Amazonas, Venezuela.

Ouratea maigualidae is similar to *Ouratea roraimae* Engler (from northern Amazonian Brazil, Guyana, and southern Venezuela, at 100–800 m elevation), and *O. sipapoensis* Maguire & Steyermark (from Cerro Sipapo, Amazonas, Venezuela, at 1600–1800 m elevation). *Ouratea maigualidae* differs from *O. roraimae* by having leaves with lateral nerves impressed (vs. not impressed), the base cordate (vs. obtuse), and larger flowers 8 mm long (vs. 5–6 mm); and from *O. sipapoensis* by the size of the leaves (6–9 × 4–7 cm vs. 11–14 × 5.5–9 cm), the lateral nerves impressed (vs. not impressed), a shorter petiole (3 mm long vs. 8–10 mm), and the shape of the fruiting torus (flattened vs. turbinated).

Paratypes. VENEZUELA. Bolívar: Dept. Atures, Sierra Maigualida, NW sector, small valley along an upper tributary of Caño Iguana, 5°30'N, 65°15'W, in low forest in depression between granitic outcrops, 2000 m, 28 Feb.–3 Mar. 1991 (fl), Berry, Huber & Rosales 4876 (MO, P), Cabeceras del río Iguana, afluente del Río Asita, 5°43'N, 65°19'W, bosque ribereño y matorrales secundarios sobre vertiente inclinada hacia el SE, alt. 1720 m, 25 Mar. 1988 (fr), Huber 12691 (MYF, P).

With the species described in this paper, there are now 70 species of *Ouratea* known to occur in the Venezuelan Guayana, including 47 endemic species (35 in Amazonas state and 12 in Bolívar state). Two Venezuelan Guayana endemics, *O. ramosissima* Maguire & Steyermark and *O. rorida* Sastre, are found in both Bolívar and Amazonas states. In Amazonas state, 15 of the 51 species known from there also occur in adjacent countries (Colombia, Brazil), and in Bolívar state, 14 of the 26 species known also occur in Guyana and Brazil. Both states are surrounded by biogeographical barriers: Amazonas state by the middle Río Orinoco (border with Colombia; Sastre, 1994) on the western edge, and the Sierra de Maigualida on the eastern edge (border with Bolívar state); Bolívar state is surrounded by Sierra Maigualida and the Río Caura valley on the western edge, and the Gran Sabana (border with Guyana) on the eastern edge.

Some tepuis are veritable islands, similar to those found in the Lesser Antilles (Sastre & Lourteig, 1986) with examples of endemo-vicariance in the sense of Gaussen and Leredde (1949): in a group of related species, each summit or island has its own endemic species. Examples of this in the Guayana Shield are: *Ouratea paruensis* Maguire & Steyermark (endemic to Cerro Parú), *O. sipapoensis* Maguire & Steyermark (endemic to Cerro Sipapo), and *O. maigualidae* Sastre (endemic to Sierra Maigualida).

Ouratea also contains examples of geographical vicariances between neighboring countries and from the same ecological niches, for instance, *O. gillyana* (Dwyer) Sandwith & Maguire in Guyana and *O. articulata* Sastre in Bolívar, Venezuela, both from savanna and belonging to section *Kaieteurea*; *O. kananariensis* Sastre in Vaupés and Amazonas, Colombia, and *O. maguirei* Sastre in Amazonas, Venezuela, both in forest and belonging to section *Caducae* with large leaves. Ecological vicariance is demonstrated on Cerro Guaiquinima, Bolívar, Venezuela, by *O. culminicola* Maguire & Steyermark, which occurs at 730–750 m elevation, and *O. orisima* Sastre, along the Río Oris, at the base of the same mountain at 300 m elevation, both belonging to section *Caducae* with spiciform inflorescences.

Speciation due to genetic drift may be very ac-

tive in the genus, perhaps exemplified by the following species pairs: *O. lajaensis* Sastre, endemic to granitic outcrops (lajas) near Puerto Ayacucho is likely derived from the more widespread *O. polyantha* (Triana & Planchon) Engler, occurring in the Colombian and Venezuelan savannas; *O. heterobracteata* Sastre, endemic to the Río Guiania along the Venezuelan-Colombian border is perhaps derived from *O. ferruginea* Engler, a more widespread species occurring in the Amazon and Orinoco River basins.

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